

**DEPARTMENT OF TRANSPORTATION****District 12**

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March 24, 2008

Tay Dam  
Federal Highway Administration  
650 Capital Mall, Suite 4-100  
Sacramento, California 95814

Dear Mr. Dam:


The California Department of Transportation (Department) has reviewed, "An Alternative to the Proposed Foothill South Toll Road; The Refined AIP Alternative Design Modifications to Reduce Displacements," a report prepared by Smart Mobility, Inc. (SMI) in collaboration with Philip Williams & Associates, Ltd., ORW Inc., and Oman Analytics dated January 2008. Also included in this letter is our comments on the January 16, 2008 letter to Chairman Patrick Kruer of the California Coastal Commission entitled: Response to TCA and Caltrans Review of SMI Report. Finally, we have included comments on the Bergmann Associates Memorandum dated January 23, 2008 addressed to Elizabeth Goldstein, President, California State Parks Foundation RE: Peer Review of Smart Mobility's Report dated January 2008.

Overall, the Department applies "context sensitive" solutions in all projects. SMI asserts that it would have been prudent to perform design refinements on the AIP alternative. When considering "context," issues such as funding, maintenance feasibility, traffic demand, impact on alternate routes, and impact on safety are considered first. Transportation decisions must integrate and balance community, aesthetic, historic, and environmental values with these transportation safety, maintenance, and performance goals. As such, alternative refinements on project alternatives are neither practicable nor typically completed in the planning stage until these context issues are resolved.

The alternative presented in the SMI Report does not meet the Department standards, and in our view does not meet the applicable engineering standards of care. Attachment A details our comments regarding the reports listed above. These comments are in addition to the prior comments the Department has made on earlier versions of the SMI documents.

Please call me at (949) 724-2102 if you have additional questions regarding the above information.

Sincerely,

  
LISA RAMSEY, P.E.  
Office Chief/Corridor Project Manager

Attachment

C: C. Quon, Caltrans  
T. Margro, TCA

California Department of Transportation (Department) comments on Smart Mobility Inc.(SMI), Report: "An Alternative to the Proposed Foothill South Toll Road; The Refined AIP Alternative Design Modifications to Reduce Displacements," dated January 2008

1. SMI claims that the Arterial Improvements Plus HOV lane-Refined (AIP-R) improvements could be implemented with a significant reduction on right of way impacts and at the same time preserving the Arterial Improvements Plus HOV (AIP) operational benefits. The Department believes that refinements always can be made on alternative designs to refine project impacts; however, there is a trade off. Some of the trade offs are operational benefits such as levels of service, and cost of the alternative. However, safety shall never be a trade-off, or compromised; therefore every effort to implement the Department's Minimum Design Standards should be employed.
2. Although the Department does agree with the SMI's statement that the AIP-R Alternative may result in acquiring fewer number of properties than is listed in the Transportation Corridor Agency (TCA) Supplemental Environmental Impact Report (SEIR) AIP alternative, the Department is not in agreement that the AIP-R achieves the same traffic benefits as the AIP alternative. Therefore, the comparison of right of way impacts is not relevant.
3. SMI refers to design guidance from a national AASHTO standards, which do not require upgrading each component of an interstate facility, such as exit ramps, to comply with standards if the existing features are functioning safely and effectively. However, Caltrans Highway Design Manual (HDM) Section 82.3 Use of FHWA and AASHTO Standards and Policies states, "AASHTO policies and standards, which are established as nationwide standards, do not always satisfy California conditions. When standards differ, the instructions in this manual (HDM) govern, except when necessary for FHWA approval (Index 108.3, Coordination with FHWA)." When conditions remain the same, there may not be a warrant to upgrade a facility to current standards. However, when traffic volumes increase, as they are in this project, the application of the to FHWA's thirteen controlling criteria for the selection of design standards of primary importance for highway safety, and are listed as follows: design speed, lane width, shoulder width, bridge width, horizontal alignment, vertical alignment, grade, stopping sight distance, cross slope, superelevation, horizontal clearance, vertical clearance and bridge structural capacity. Design standards used for any project should equal or exceed the minimum standards provided in the HDM to the maximum extent feasible.
4. Alicia Parkway Interchange: The Design cited on Page 17, Figure 6 as AIP-SEIR is incorrect and is what is proposed for TCA's I-5 design alternative, not the AIP alternative. The AIP does not require a redesign of the ramps in the northbound direction, unlike the I-5 design alternative. It is very likely that a detention basin at this location could be designed to fit within the existing right of way.
5. La Paz interchange: Some design refinements may be made to reduce right of way impacts; however, minimum design standards such as providing minimum horizontal curve alignments for safe stopping sight distances for the standard design speeds should always be sought even if it does not avoid right of way impacts.
6. Crown Valley Interchange: Although SMI proposes two alternatives for this interchange, as noted in our earlier letter, the Single Point Diamond Interchange (SPI) alternative may not require the need to take existing buildings; however, the Department has concerns over the traffic operations level of service given the projected traffic volumes. The Department also has concerns about the flyover

option SMI proposes. Both alternatives would have massive structures that historically Orange County communities have been sensitive about. The Department has concerns about the geometric alignment of the southbound flyover shown such as: the required distance between successive ramps does not appear to be accounted for; horizontal curves should not follow crest vertical curves as they create safety concerns; finally, the length of the ramp may not be long enough to achieve all the safety requirements.

7. Ortega Parkway Interchange: SMI presents Alternatives 1 and 2 from the city of San Juan Capistrano's website that shows two design concepts for the Ortega interchange that have been approved by the Department. SMI says that these alternatives require a smaller footprint and that TCA's AIP-SEIR proposes a large partial cloverleaf design, which they say is highly inappropriate for this location. SMI says the SEIR concept was not considered for further development and is inconsistent with local plans. SMI goes further to say that the Department's approval of Alternatives 1 and 2 illustrates design flexibility inherent in the "mandatory" standards when designing facilities in built-up areas.

Unfortunately, SMI fails to present the status of this interchange correctly. The Ortega/I-5 Project Study Report signed by the Department and the City Manager on 3/29/05 indicates that alternatives 1 and 2 are only interim operational improvements alternatives and that three other long-term alternatives can accommodate projected year 2030 traffic growth. Alternatives 1 and 2 are proposed as short-term operational improvements to provide sufficient capacity to accommodate current deficiencies at the interchange if construction is completed by 2010. Whereas, alternatives 3, 4, and 5 are proposed to provide additional capacity to accommodate projected year 2030 traffic growth which is consistent with TCA's SEIR alternative. Alternatives 3, 4, & 5 are partial and full cloverleaf interchanges. In fact, alternative 5 is the same configuration as TCA's SEIR alternative.

8. Department approval of non-standard mandatory features at Ortega was likely provided because the design is an interim alternative. As noted in our letter to FHWA dated 6/21/06 regarding the initial SMI documents, the Department has approved exceptions to design standards with acknowledgement that full standards would be restored at some future date.
9. Pico Interchange: SMI cites a city of San Clemente Study of Avenida Pico at I-5 Improvements. SMI reports that the study shows a Single Point Interchange as performing very well in terms of traffic congestion relief. SMI says that several other options are currently under consideration by the city. However, SMI neglects to mention that the Single Point Interchange as SMI proposes, was in fact dropped from further consideration in the San Clemente study. On another point, although the city conducted this study, the Department never signed or agreed on any of the alternatives.
10. El Camino Real: Page 22 of the SMI report states that the AIP-R will close one of the northbound on and off ramps and that with these closures, there will be adequate traffic capacity for the future traffic volumes. The report makes this claim without any supporting data or analysis of the impact of such closure on the local traffic circulation or the I-5 mainline traffic.
11. El Camino Real: The TCA layout geometry for this location was designed to bring the area up to full design standards. It should be noted, that all the alternatives were designed to have full standards for equal comparison purposes. SMI has made design refinements in the northbound direction that

appear to have some merit; however, approvals for non-standard interchange would have to be sought, but is not guaranteed.

12. Arterial Improvements: The Department defers to the local public agencies for design oversight for local arterials.

I-5 Cross Sections:

13. Soundwalls: A study would be required to determine the exact location for soundwalls. However, it is likely that soundwalls would be required along much of this corridor.
14. Cross Section S: The right of way in this area is very restrictive. SMI claims that the SEIR incorrectly assumes 5 lanes in each direction plus HOV. The AIP plans show 4 lanes plus an HOV. In order to shift the mainline alignment, the designer must review the alignment up and downstream along with the nearby ramps to see if an alignment shift can work. Reduction of the local arterials must be approved by the local public agency and the community.
15. Cross Section S, (Page 28 & 29): It is hard to understand that the existing 5-lane arterial can be reduced to 3 lanes and be adequate for the year 2025 traffic. This assumption is based on current ADT, not future ADT and not considering the peak hour volumes, impact of the turning movements, on through traffic, bicycle traffic, and parking.
16. Cross Section B: Widening of the I-5 segment between El Toro Rd and Alicia Pkwy refers to cross-section "B" which could not be found in the report. We believe there is no available right of way for this section.
17. Plan Sheets: SMI shows the limits of roadway with yellow linework without showing lane configurations. As such, the Department cannot verify the accuracy of information provided.

Department's responses to SMI's 1/16/08 letter to Chairman Kruer, California Coastal Commission, RE: Response to TCA and Caltrans Review of SMI Report.

18. SMI states that their report was never intended to provide sufficient engineering information to gain the Department's approval. The Department has never proposed "approval" of their recommendations was required; however, the Single Point Interchange (SPI) Designs need approval at the concept level and local agencies, the Department, and the community would need to endorse and approve these special interchange alternatives very early on. There is no mention of any discussions to garner support for SPI's at the local level mentioned in the SMI report.
19. The SMI report claims that the AIP-R Alternative is superior in terms of reducing the right of way acquisitions and improving the I-5 operations without providing any supporting data to substantiate the claim that the operational benefits remain. The Department believes the right of way impacts will be much greater than what is being acknowledged in the SMI report and the operational impacts will have a greater negative effect on the benefits associated with the AIP alternative.
20. Page 2 under "Safety and Design Standards", first paragraph states: "Many roads that are designed by the book to these standards are still unsafe. Conversely, many roads that fall far short of the design standards are actually quite safe when you consider the actual accident rate". This statement is

deceptive and misleading. Design engineers should make every effort to adhere to the design standards, which were developed and refined over the years to provide the safest and most operationally effective facilities. Engineers may face certain constraints and challenges compelling them to deviate from these standards. Such design exceptions may eventually get approved after careful analysis. It should be noted that the Highway Design Manual (HDM) standards are the minimum standards and design engineers should pursue higher standards when considering design features. Since I-5 was originally constructed in the 60's, it's a common practice to upgrade the existing facility as much as it is practically possible and not to degrade it just for the purpose of reducing the right of way impacts.

21. Page 2, the third paragraph of the same section states: "In the end, however, non-standard-yet safe-feature are often approved..." The SMI report is drawing the conclusion that any or all of the non-standard features would be safe before the project is even built. What the SMI report is missing is that some of the highway facilities could be designed to fully meet the HDM standards but still does not meet the operational requirements for a given location. An example of this situation is a ramp geometric design that might be standard but the overall ramp body lacking the storage capacity to handle the traffic demand. This ramp would experience delay and more accidents and will be rendered as operationally deficient. This is one concern that was expressed in the Department's comments but the SMI response failed to address and repeatedly used the statement "lack of design details." SMI should provide information that demonstrates that the SPI as proposed would meet the traffic demand and would be operationally feasible.
22. The Department's Highway Design Standards are not lofty goals.
23. Page 3, items 2 & 3: The Department's evaluation of the SPI ramps is based on the ramp peak hour capacity and the AM and PM peak hour volumes listed in Table E-40 of the SOCTIIP EIS/SEIR. This is strictly addressing the ramp level of service based on the volume/capacity ratio. Such ramp level of service is different from the intersection level of service analysis that needs the various turning movement volumes.
24. Page 3, items 3 & 4: it is common practice to consider the most cost effective alternative as long as it meets the purpose and need of the project. The ParClo design appears to be superior at the locations listed in the TCA AIP alternative. It is not clear what SMI meant by stating, "if the ParClo design results in an unacceptable property impact..." What is the SMI threshold for the acceptable right of way impact? Based on the traffic demand and existing geometry of these locations, it was determined that the capacity provided by the ParClo is needed to maintain acceptable traffic level of service. The SMI proposed SPI design did not provide any supporting data to prove that such design will be operationally functional. An example to illustrate how the SPI would be deficient at certain locations is the Avenida Pico Interchange. Under the TCA plan, it's proposed to reconstruct the interchange as partial cloverleaf with two 2-lane entrance ramps serving each freeway traffic direction. The year 2025 projected traffic for both ramps serving the S/B I-5 is 1780 vehicles per hour during the PM peak hour according to Table E-40 of the SOCTIIP EIS/SEIR AIP alternative. The SMI proposed SPI design with a single 2-lane on-ramp with maximum capacity of 1500 vph would not provide adequate storage capacity needed for the safe and effective operation of the metered ramp.
25. SMI is not clear how the Department developed conclusions regarding ramp levels of service without the detailed traffic data, and that they say there is incomplete information on peak hour traffic turning

movements in the TCA report, which is why they did not conduct level of service analyses. SMI has referenced the SEIR table E-40 from TCA's traffic tech report.

SMI appears to be mixing up two issues: the ramp storage capacity, and the ramps intersection Level Of Service (LOS) analysis. The Department's comment addressed the ramp storage capacity based on the overall ramp volumes provided in the TCA traffic report. It's simply computing the V/C to determine whether the ramp (either on or off ramp) has adequate storage capacity to keep the traffic within the ramp body during the peak hours. It should be noted that on ramps are metered on I-5 for a maximum capacity of 900 vph for a single lane on-ramp or 1,500 vph for a 2-lane on ramp. Exceeding this volume will result in long queuing spilling back onto the local street or the mainline. Such storage capacity analysis is different from the ramp intersection LOS analysis that requires the turning movement volumes not provided in the TCA report and was not mentioned in Department comments.

26. Page 3, items 1b, 1c, 1d, 1e & 9: The reported SMI Interchange Detail sheets show interchange designs that reflect minimal right of way impacts. The Department listed geometric design concerns and design elements that must be included and resolved prior to the determination of right of way impacts.
27. Page 3, items 2, 3 & 4: SMI response is inadequate as stated. The Department used proposed on-ramp traffic volumes to justify the need for both existing direct and loop two-lane on-ramps that are currently in operation. The proposed SPI concept will only provide 1 two-lane ramp in each direction. This is a degradation of the existing condition in terms of storage capacity.
28. Page 3, item 3 & 4: ParClo interchanges provide a better level of service than SPI's. The Department has numerous concerns with SPI's as outlined in our January 7, 2008 to FHWA. SPI Design Guidelines require SPI's proposals to gain concept approval early in the environmental phase as possible, not in later stages of engineering.
29. Page 4, item 10: SMI reported 2005 Cost estimates of \$195,000/residence and \$448,000/business appeared very low, and were not consistent with TCA's 2005 cost estimates. Updated costs in this revised report of \$650,000/residence, and \$1,375,000/business appears more realistic.
30. Page 4, item 13: The use of retaining walls to replace right of way takes is often appropriate. However, retaining walls are often more expensive than the cost of an adjacent residences or businesses. Therefore, it is appropriate to include the cost of retaining walls in the estimate.
31. Page 4, item 14 & 22: Reference to the Orange County Long Range Transportation Plan (LRTP) appears misleading. Your statement intends to show that funding of the AIP alternative is possible through the LRTP. The improvements listed in the LRTP are different than the AIP alternative, and as such, they don't account for the traffic capacity afforded by the toll road. So, funding for the AIP alternative is still not identified.
32. Page 4, item 15 & 17: Alternative refinements on project alternatives are neither practicable nor typically completed in the planning stage until context issues such as funding, maintenance feasibility, traffic demand, impact on alternate routes, and impact on safety have been resolved.

33. Page 4, item 16: References to the locally preferred alternative are not accurate.
34. Page 5, item 19: While it may be valid that regional modeling may not be sensitive enough to reflect interchange types. A proposal to implement constrained successive interchanges impacts the overall system.
35. Page 5, item 20: Our position is unchanged on this item.
36. Page 5, item 22: The SMI Report includes excerpts from the 2006 Orange County Long-Range Transportation Plan (LRTP) that describe "*improvements proposed for the I-5 corridor, many of which were also included in the AIP alternative.*" The SMI report's excerpts are not comprehensive references to the LRTP as SMI failed to draw out or identify that the completion of the southern portion of the Foothill Transportation Corridor and widening of the toll road system to its planned width (Eastern/Foothill Transportation Corridor Agency Project) plays a significant role in the LRTP baseline. As such, the right of way impacts related to the LRTP Interstate 5 (I-5) improvements would be less than the AIP alternative because they do not provide the same capacity benefits. It is important to acknowledge that because LRTP assumes SR-241 in it's baseline analysis and therefore improvements to I-5 are in addition to the SR-241 and not in lieu-of. To provide clarity, we believe SMI should acknowledge this fundamental difference.

Department Comments on the Bergmann Associates Memorandum dated January 23, 2008

37. General Overview, Para 4 – There is no mention of using the Department's adopted Highway Design Manual.
38. Interchange Concepts: The Department has concerns about the following statement: "In addition, single vehicle run-off-the-road crashes due to existing tight ramp radii tend to be less serious relative to personal injuries than crashes at ramp terminals which usually involve multiple vehicles. Many highway agencies currently emphasize reducing the number of crashes that result in serious injury as opposed to simply reducing the number of crashes. In the face of substantial right of way impacts, strong consideration should be given to retention of existing non-standard ramp geometrics when they are not significantly contributing to serious crash problem. Reconstructing ramps to less than standards, but improved over existing, should also be considered if doing so will not result in unacceptable right-of-way impacts."
39. Bergman states that operational and safety problems that the AIP alternative would solve on I-5 should be included as costs on the toll road alternative. The idea of requiring direct impacts costs associated from one alternative is not reasonable or practicable. Other operational and safety problems need to be solved separately.
40. The Department's review of the modeling done for the project is that TCA's assumptions and conclusions are adequate and reasonable and they are consistent with regional modeling assumptions. This conclusion was further validated by an independent consultant hired by the collaborative to review the modeling methodology.